WE CLAIM:

1. A method for measuring dispersion of an optical link between two nodes of an optical network comprising:

at a transmit end of a link under test LUT, generating a two-color signal of a first and a second wavelength, each modulated with a digital signal, and transmitting same over said LUT;

changing said second wavelength with respect to said first wavelength with a detuning value to impose a known delay between said digital signal carried by said first wavelength and said digital signal carried by said second wavelength; and

measuring the BER of said two-color signal for a plurality of detuning values to obtain a BER response.

2. A method as claimed in claim 1, further comprising determining the dispersion of said LUT from said BER response.

3. A method as claimed in claim 1, wherein said step of changing comprises maintaining said first wavelength constant and changing said second wavelength with said detuning values.

4. A method as claimed in claim 1, wherein said step of transmitting comprises in-phase modulating each said first and said second wavelength with said digital signal.

5. A method as claimed in claim 3, wherein said step of in-phase modulating comprises:

combining said first and said second wavelengths at the input of a modulator to obtain a combined optical signal; and

modulating said digital signal over said combined optical signal using said modulator.

6. A method as claimed in claim 1, wherein said step of generating further comprises, for a selected detuning value, changing the ratio between the launch powers of said first and second wavelengths to obtain a minimum BER.

7. A method as claimed in claim 2, wherein said step of determining the dispersion of said LUT comprises:

identifying from said BER response an uncorrelated-pattern regime defined by $BER(\tau) = BER(\tau+T_B)$, where τ is the group delay and T_B is the bit period of said digital signal; and

determining the relative group delay from said BER response for a plurality of detunings between said first and said second wavelengths.

8. A method as claimed in claim 2, wherein said step of determining the dispersion of said LUT comprises

from said BER response, establishing a group delay response $\tau(\lambda)$;

determining a fit function which characterizes best said group delay response $\tau(\lambda)$ for said LUT;

choosing an arbitrary reference wavelength λ_{ref} for determining the parameters of said fit function fit; and

determining the dispersion of said LUT from said second order polynomial fit.

9. A method as claimed in claim 2, further comprising determining the sign of dispersion.

10. A method as claimed in claim 2, further comprising:

inserting into said LUT a module with a known dispersion;

determining the dispersion of said two-color signal for a detuning value when said LUT includes said module; and

determining the sign of dispersion by comparing the dispersion of said LUT with and without said module.

11. A method as claimed in claim 2, further comprising:

delaying said digital signal modulated over said first wavelength by a fixed delay value τ_0;

identifying from said BER response a correlated-pattern regime where the differential group delay τ is less than two bit periods T_B; and

determining the sign of the dispersion from the sign on said fixed value.

12. A method as claimed in claim 11, wherein said fixed delay value is applied to said digital signal in one of the electrical and optical formats.

13. A dispersion measurement apparatus comprising:

a transmitter unit for generating a two-color signal and transmitting same over a link under test LUT;

a receiver for detecting a combined electrical signal from said two-color optical signal and measuring the BER of said combined electrical signal; and

a dispersion calculating unit for determining the dispersion of said LUT.

14. A dispersion measurement unit as claimed in claim 13, wherein said transmitter unit comprises:

a first and a second transmitter, each for generating a respective first and second wavelength;

means for combining said first and said second wavelengths into a combined optical signal; and

an optical modulator, for modulating a digital signal over said combined optical signal to provide a two-color signal.

15. A dispersion measurement unit as claimed in claim 14, wherein said second transmitter is a tunable transmitter for changing said second wavelength to vary the BER of said combined electrical signal.

16. A dispersion measurement unit as claimed in claim 13, wherein said dispersion calculating unit comprises means for generating a BER response including a plurality of BER values measured for a plurality of values of said second wavelength.

17. An apparatus as claimed in claim 16, wherein said dispersion calculating unit further comprises:

means for constructing a group delay response $\tau(\lambda)$ from said BER response;

means for determining, on said $\tau(\lambda)$ response, a fit function for said LUT and calculating the parameters of said fit function for an arbitrary reference wavelength λ_{ref};

means for determining the dispersion of said LUT from said fit function.

18. An apparatus as claimed in claim 16, further comprising memory means for storing said BER response.

19. An apparatus as claimed in claim 17, further comprising a memory for storing BER response, said group delay response, and said fit function.